Remarks

Claims 1, 2, 5-8, 10 and 11 are pending in the application. Claims 3, 4 and 9 have been canceled without prejudice or disclaimer..

Claim rejections

Section 103

Claims 1, 2, 5-8, 10 and 11 were rejected under 35 USC 103(a) as being unpatentable over Kawashima et al. (US 6,851,258) ("Kawashima") in view of Tashiro et al. (US 6,662,480) ("Tashiro"). The Applicant respectfully traverses. The cited references do not support the rejection for at least the reason that they do not disclose or suggest at a final stage of the PM elimination control, that is, when the estimated accumulation amount is less than a determination value that is slightly more than zero, the apparatus executes burn-up control, in which performance and stopping of concentrated intermittent fuel addition to a section of the exhaust system that is upstream of the catalyst are repeated a predetermined number of times, as recited in independent claims 1, 7 and 11.

The noted feature is clearly absent from Kawashima and Tashiro. The Office Action cites Schaller et al. (US 6,948,311) ("Schaller"), which was applied in a rejection of claims 3, 4 and 9, discussed later, as disclosing the noted feature. The Applicant respectfully disagrees.

In Schaller, in a third phase for supplying uncombusted fuel to the exhaust gas, a quantity of uncombusted fuel is intermittently set to a constant value. However, Figure 3 and column 8, lines 1-3 in Schaller merely disclose "dotted lines" showing a simple intermittent fuel addition with constant intervals. Schaller does not disclose concentrated intermittent fuel addition that is repeated a predetermined number of times, as by contrast is recited in the independent claims.

As illustrated in Figures 6(a), 6(b) and page 14, lines 7-19 of the present application, "[t]he concentrated intermittent fuel addition unavoidably causes the catalyst bed temperature to increase noticeably. Thus, the fuel addition is periodically stopped, thereby suppressing excessive increase in the catalyst bed temperature. As a result, intermittent concentrated fuel addition is repeatedly performed and stopped, and the

exhaust air-fuel ratio is repeatedly reversed between a rich state and a lean state as shown in Fig. 6(b). The burn-up control is ended when the repetitions of performing and stopping of the concentrated intermittent fuel addition has reached a number (in this embodiment, three times) that is sufficient for burning the PM remaining in the NOx catalytic converter 25 and the PM filter 26."

Further, "point t3" in Fig. 3 of Schaller at the point the intermittent fuel injection is started is not specified.

However, in the present invention, "the point t3" is specified as "a final stage of the PM elimination control, that is, when the estimated accumulation amount is less than a determination value that is slightly more than zero."

Therefore, as described in the paragraph bridging pages 13 and 14, "the concentrated intermittent fuel addition increases the amount of unburned fuel component and oxygen supplied to the catalysts of the NOx catalytic converter 25 and the PM filter 26 to a level sufficient for burning the PM that cannot be burned in the PM elimination control. Therefore, the concentrated intermittent fuel addition permits the PM to be burned."

In view of the above, Kawashima and Tashiro do not suggest the features of the independent claims, and Schaller does not remedy the deficiencies in Kawashima and Tashiro. Consequently, claims 1, 7 and 11 are allowable, as are the claims dependent thereon for at least the foregoing reasons. Withdrawal of the rejection is therefore respectfully requested.

Claims 3, 4 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kawashima in view of Tashiro as applied to claims 1 and 7, respectively, and further in view of Schaller. Claims 3, 4 and 9 have been canceled.

Conclusion

In light of the above discussion, Applicant respectfully submits that the present application is in all aspects in allowable condition, and earnestly solicits favorable reconsideration and early issuance of a Notice of Allowance.

The Examiner is invited to contact the undersigned at (202) 220-4323 to discuss any matter concerning this application. The Office is authorized to charge any fees related to this communication to Deposit Account No. 11-0600.

Respectfully submitted,

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By: _____

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